

TREATMENT OF THE URETER, WHEN NEPHRECTOMY IS DONE FOR TUBERCULOSIS OF THE KIDNEY *

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When one considers the management of the ureter and the fatty capsule in nephrectomy for renal tuberculosis, one finds a great many different expressions of opinion, quite analogous to the unsettled condition which the entire question of surgery of kidney tuberculosis was in fifteen years ago. Because of these facts, one is justified in stating that the question of treatment of these two structures is not as definitely settled as in the case of the kidney.

I am not going into detail in regard to the fatty capsule, but the possibility of its being the cause of post operative sinus formation after nephrectomy must not be forgotten. The extensive work on the lymphatics of the kidney and its capsule by Stahr and the demonstration of specific tuberculous lesions in the capsule by Israel, Albarran, Kidd, and Kelly have led these men to recommend a removal of as much of the fatty capsule as possible. The danger of injury to the peritoneum with resulting tuberculous peritonitis is obvious.

The many different ways of treating the ureter which have been advised is proof that the ideal method has not been obtained.

The methods of severing the ureter have been varied. The end of the ureter may be crushed with a heavy forcep and cauterized with carbolic or iodine. Others prefer to burn through the ureter very slowly with the actual cautery. Schlaginweit demonstrated that occasionally special treatment was not necessary. In several cases he simply cut the ureter off and allowed it to retract, and these cases ran a usual post-operative course.

Taddi has shown in animal experiments that the ureter closed more quickly when it was not ligated. When it was ligated, hollow spaces formed in the walls resembling true cysts. There was never a trace of reflux of urine into the wound. Therefore in nonseptic conditions, he advises against ligation of the ureter. One would not feel justified, however, in applying the results of Taddi's animal experiments in his own clinical cases.

The treatment of the ureteral mucosa has been quite as varied as the methods of severing the ureter. Kuenmell uses a special thermo-cautery which is introduced into the ureter, while Albarran, Tuffei, and others sear it with heat. Israel prefers the injection of pure fluid carbolic acid into the lumen of the ureter, filling up the entire ureter and Koenig injects tincture of iodine. In order to bring about an early healing, Paschkis advises that the stump be given anti-tuberculous treatment after the operation. Suture of the stump to the skin was advised in order that the ureteral mucosa could be treated directly, and to prevent infection of the wound with tuberculosis, and fistula formations. Israel in his analysis of 1,023 cases, obtained figures showing that fistula occurred in 10 per cent of cases in which the

ureter was allowed to drop back into the wound, whereas sewing the ureter into the wound was followed by fistula in 16.3 per cent of cases.

Total extirpation of the ureter to the bladder or to include a piece of the bladder wall, was advised when nephrectomy was first recommended, but due to the increased mortality rate, it soon fell into disfavor. These procedures were recommended by Alessandri, Garceau, Giorgani, Ramsay, Kelly, Reynolds, Israel and Longard. Of these Longard has more recently recommended the following technique. The kidney is exposed by the usual lumbar incision; after the vessels have been ligated and the kidney freed, the ureter is freed down to the pelvis, and a second incision is made parallel and close to Poupart's ligament. The incision is carried through the muscles to the peritoneum; the kidney and attached ureter are pulled through this incision; after which the ureter is divided and then fixed into the wound.

The exact diagnosis of the ureteral conditions in surgical kidney is often difficult and perhaps impossible, even with the assistance afforded by the later methods of investigation. However, in certain cases, even though the pathology of the ureter may not be entirely plain in the mind of the investigator, enough is certain to justify the operation of combined ureterectomy and nephrectomy.

This was found to be true in the cases to be reported, and although not all were infected with tuberculosis, in each the ureter was badly diseased and would undoubtedly have been the cause of a slow healing sinus, following nephrectomy.

Formerly this was a formidable and rather dangerous procedure, but, as now carried out, the risks to the patient, both as regards function and life, are very much reduced. It is surprising the small amount of shock there is attendant upon operations on the kidney or ureter, and it is surprising how rapidly these patients get well. In my limited experience, the dangers of the combined operation have not proven greater than either of the single operations.

The combined operation recommended here may be begun either upon the kidney or the ureter, depending upon the necessities of the particular case. If the kidney is first attacked, it is exposed through the usual oblique incision, and is thoroughly freed of its attachments down to the brim of the pelvis and the kidney and ureter are dropped into the wound, closed either in layers or by through and through sutures.

The patient is now placed in the dorsal position and through a lateral rectus incision the peritoneum is exposed and deflected toward the mid-line until the ureter comes into view. The ureter is then stripped down to the bladder where it is ligated, divided, and the ends cauterized with phenol. It is now easy to free the ureter up toward the kidney until the kidney and ureter can be delivered through the lower wound. The wound is then closed without drainage, or at the most with a soft rubber drain, according to the judgment of the operator.

Sometimes it will be desirable to reverse the foregoing procedure by first doing the ureteral dissection in front; closing the wound, and then pro-

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ceeding with the kidney operation, eventually bringing the kidney and ureter out through the loin wound. The latter order is preferable when the kidney contains pus, and liable to rupture under any unusual manipulations, or when the mass is so large that it cannot be easily delivered through the anterior wound. At the conclusion of such a combined uretero-nephrectomy, the patient, of course, has two wounds, but there is a broad plane of abdominal wall between the two incisions that has not been cut and which acts as a splendid support, militating very strongly against a hernia.

CASE 3746: Age 36. Housewife.

HISTORY: Apparently well until four months ago, when she began having frequent urination. The frequency has increased and now she has incontinence so that she is wet most of the time. Very little pain. Does not have night sweats, but has lost eight pounds in weight.

DIAGNOSIS: Left renal tuberculosis. Tuberculosis of bladder.

OPERATION: The kidney was exposed by the usual oblique incision and easily freed from its capsule. The vessels were tied individually. The ureter was very thick and it was thought best to remove it along with the kidney. The ureter was freed down to the brim of the pelvis and then the kidney and attached ureter were dropped in the wound and the wound closed without drainage. With the patient in the dorsal position, a left rectus incision was made and the ureter exposed extraperitoneally. The ureter was freed down to the bladder where it was ligated, divided and the ends cauterized. The kidney, with the attached ureter, was delivered through the lower wound and the wound closed with through and through sutures, and a small rubber dam drain.

Examination of the specimen showed many tubercles in the kidney and also in the ureter. There was practically no drainage, so the drain was removed on the third day. Both wounds were healed on the eighth day and the patient left the hospital on her fifteenth day, feeling well.

CASE 3330: Age 43. Male.

HISTORY: For seven months has had pains in the left loin with frequent and painful urination. Pus and blood in urine.

DIAGNOSIS: Left renal tuberculosis. Left ureteritis. Bladder tuberculosis.

OPERATION: The lower end of the ureter was first dissected free, ligated, divided, and cauterized. The cut end of the ureter was covered by a finger cot; dropped into the wound and the wound closed without drainage.

A left nephrectomy was then done and the ureter and kidney brought out through the loin wound. Wound closed without drainage. Both wounds healed by first intention and the patient was up in fourteen days, leaving for home in the country on his twenty-first day.

CASE 2772: Age 42. Widow.

HISTORY: Nine years ago had stone removed from the bladder. Four years ago diagnosis was made of stone in the left kidney. Fairly well until two months ago, when pain began in the left side.

DIAGNOSIS: Stone in left ureter. Dilated ureter. Pyonephrosis.

OPERATIONS: The kidney was first freed and the vessels ligated, leaving kidney and ureter attached. Wound closed after replacing the kidney. Lower end of the ureter exposed in the manner described above, and dissected free. During the manipulation the ureter was torn across well down toward the bladder. The kidney and ureter were removed and, with the finger in the vagina, the end of the ureter was lifted up so that it could be taken off close to the bladder.

The wounds both healed readily and the patient left the hospital on the eighteenth day.

CASE 2854: Age 23. Female.

HISTORY: Recurring attacks of left loin pain from

age of 12 years. Operated upon four years ago and a stone removed. Does not know from where. One year ago a second operation was done and since then there has been present a left ureteral fistula.

DIAGNOSIS: Fistula of left ureter. Stone in left kidney.

OPERATION: An attempt was made to close the ureteral fistula, but when the fistulous tract was dissected down to the ureter, the latter was found very much narrowed toward the bladder and the upper portion was greatly dilated so that the finger could be introduced well up toward the kidney. The ureter was ligated and divided and the wound closed. The patient was then placed in the nephrectomy position and the kidney and ureter removed intact. She left the hospital for home on the thirtieth day and both wounds were completely healed.

CASE 3299: Age 65. Female.

HISTORY: Pain in right loin with frequent urination for two months. Septic condition developed with fever.

DIAGNOSIS: Carcinoma of bladder. Right pyonephrosis. Dilated right ureter.

OPERATION: Because of the toxic symptoms from the pyonephrosis, it was thought best to remove the kidney and ureter. The kidney was freed in the usual manner and the wound closed. Through the lateral rectus incision, the ureter was identified; but in trying to free it, the ureter was torn very close to the bladder. The ureter and kidney were removed through the lower incision. It was impossible to ligate the short torn end close to the bladder,* so a drain was put in and the wound closed. On the thirty-first day the patient left the hospital with both wounds healed.

CASE 3800: Age 27. Married.

HISTORY: Pain in right back, frequency and incontinence of urine. Duration 6 months.

DIAGNOSIS: Dilated right ureter. Dead right kidney.

OPERATION: Right rectus incision. The dilated right ureter was exposed extraperitoneally and dissected free down to the bladder. Lying alongside of the dilated ureter was a second ureter which was much less than normal size. This second ureter had not shown up in the x-ray, when the bladder was distended with sodium iodide and the orifice had not been observed at the time of the cystoscopy. The small ureter was ligated, cut and both ends cauterized with phenol.

The dilated ureter was ligated, divided and the ends cauterized with phenol. The stump attached to the bladder was then invaginated by a purse string suture of pagenstecher in the same manner that an appendix stump is invaginated. The wound was then closed with silkworm gut sutures and a small rubber dam drain left in.

The patient was then placed in the kidney position and the kidney with the attached ureters removed in the usual manner. The kidney was badly diseased, there being very little kidney tissue left. The small second ureter had a tiny pelvis of its own which was separate from the main pelvis.

The kidney wound was closed without drainage. The patient made a rapid recovery. Both wounds were entirely healed and the stitches removed on the eleventh day.

Examination one month later showed healthy scars, clear urine and the patient had gained eight pounds.

The cases reported here are too few to afford ground for generalization. However, taken in connection with other reports that have appeared in the literature, it would seem: (1) The combined operation adds but little, if any, to the surgical risk of either nephrectomy or ureterectomy; (2) The chances of a slow healing sinus or a fistula are lessened; (3) If the foregoing observations prove well founded in the experience of others, it is probable that the combined operation should be done more frequently, especially in cases of renal tuberculosis.